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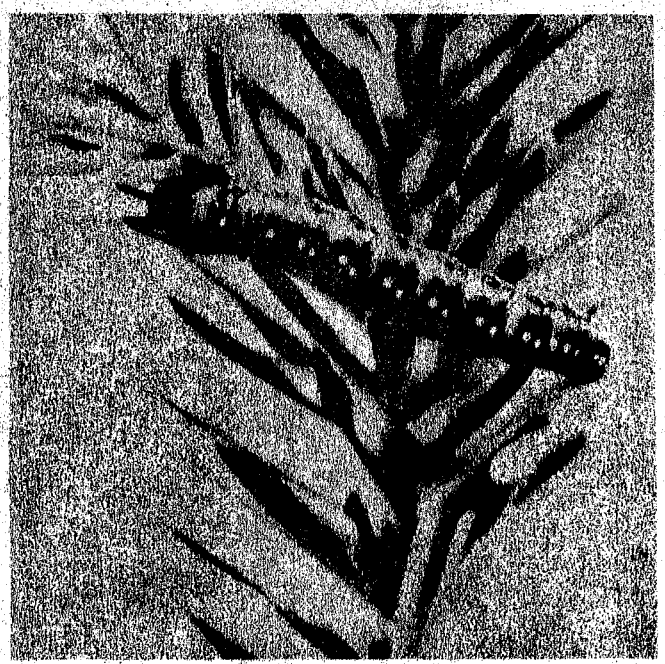
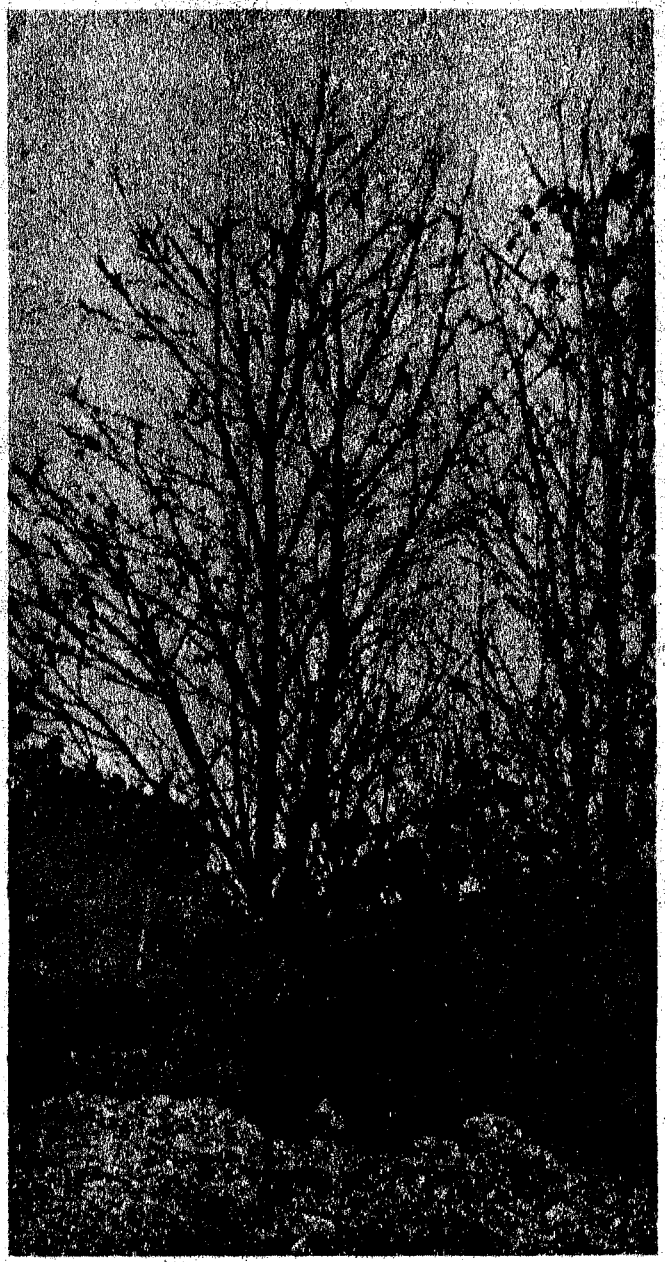
Annual District Report Forest Insect and Disease Survey 1974

Newfoundland





Newfoundland Forest Research Centre
St. John's, Newfoundland
Information Report N-X-129

Cover Photographs

Top left — Technician showing shrew trap in census plot.

Lower left — Spruce budworm larva.

Right — Black knot disease on pin cherry.

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1974 ANNUAL DISTRICT REPORT
FOREST INSECT AND DISEASE SURVEY
NEWFOUNDLAND

by L.J. CLARKE, E.C. BANFIELD, W.J. SUTTON, D.M. STONE,
D.S. O'BRIEN, K.E. PARDY and G.C. CAREW

NEWFOUNDLAND FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
INFORMATION REPORT N-X-129

APRIL 1975

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FOREST INSECT AND DISEASE SURVEY

NEWFOUNDLAND

by

L.J. Clarke, E.C. Banfield, W.J. Sutton, D.M. Stone,

D.S. O'Brien, K.E. Pardy and G.C. Carew

INTRODUCTION

The following report is a comprehensive description of the work program conducted in 1974 by the Forest Insect and Disease Survey section of the Canadian Forestry Service in St. John's. Regular activities included monitoring and sampling surveys of the 10 Ranger Districts (Fig. 1); a limited ground survey of Labrador; aerial surveys of the Island and Labrador; an intensive egg-mass survey of the spruce budworm; establishment of permanent sample plots on the Avalon Peninsula and the annual census of the masked shrew. Assistance was also provided to the National Film Board on the making of a film on the operations of the F.I.D.S. in Canada and in complying with numerous telephone calls from private property owners for advice on the control of insects and diseases on shade and ornamental trees. A summary of the information has already been submitted for publication in the National Annual Report of the Survey for 1974.

In May and the first half of June the weather was cold and wet. The second half of June and all of July were warm and dry except for the east coast of the Island where arctic ice off the coast kept temperatures

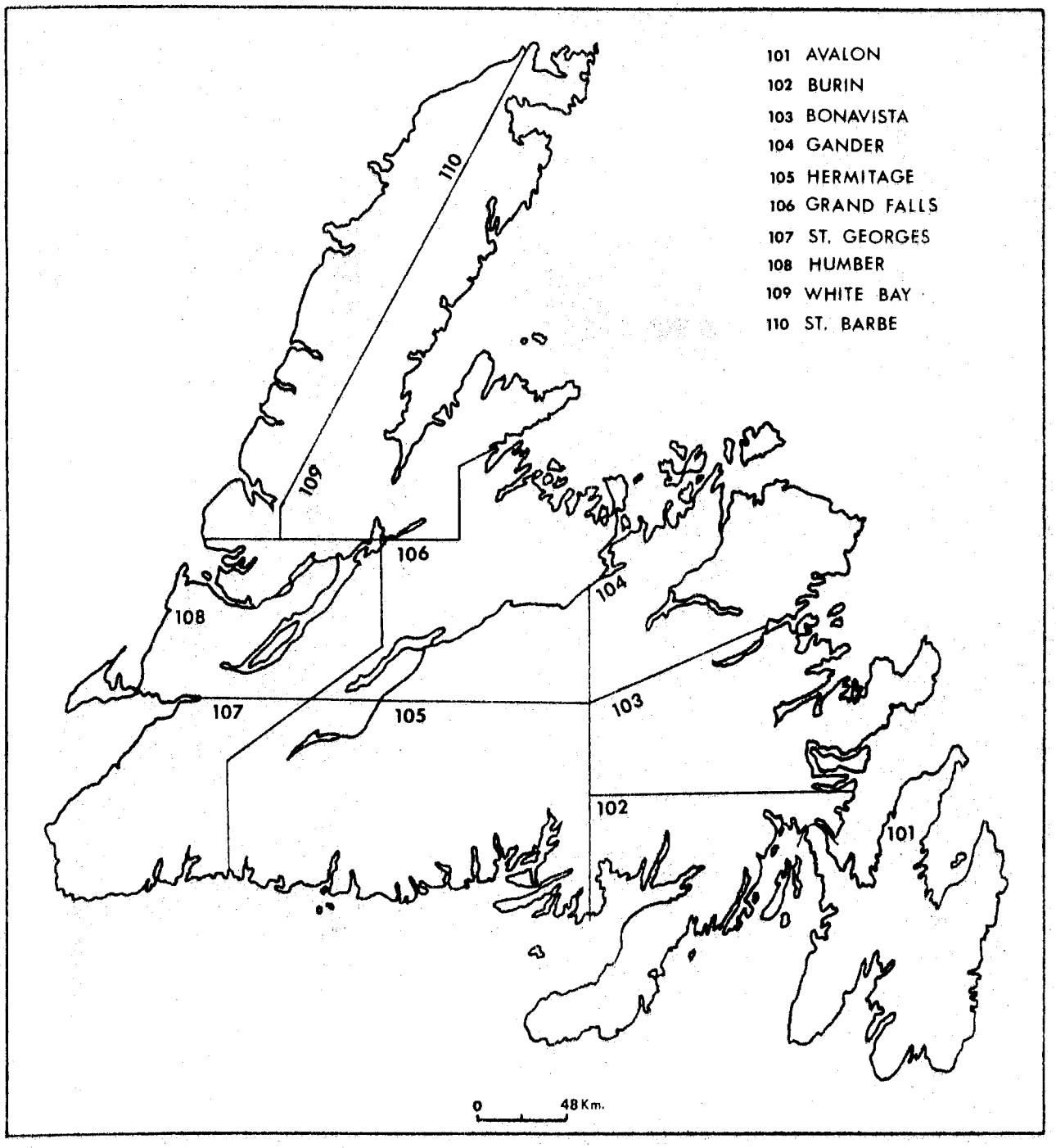

Fig. 1 Forest Insect and Disease Survey Districts

Island of Newfoundland

cool and precipitation above normal. In August and September weather conditions were normal. Table 1 shows the monthly averages of temperature and precipitation for the last five years. The spruce budworm was the major forest pest during the season but population levels of the blackheaded budworm, the balsam fir sawfly and the eastern hemlock looper increased appreciably in several areas and these insects could pose a major threat in the next few years. The larch casebearer caused severe damage in eastern and central Newfoundland but infestations in western areas collapsed due to parasitism and ice storm conditions. Balsam woolly aphid population levels were high in the Port Blandford and Argentia areas. The birch casebearer caused moderate to severe damage throughout central Newfoundland and in the Terra Nova National Park in eastern Newfoundland. The satin moth was a serious pest for the second consecutive year in several towns throughout the Island and in the city of St. John's. The fall webworm infestation also continued in the Stephenville Crossing area.

The most common foliar diseases were shoot and leaf blight of aspen regeneration and ink spot of aspen near Happy Valley in Labrador. Winter drying was severe near South Pond, Hall's Bay. Fume damage to surrounding vegetation continued near the Long Harbour electro-chemical plant and some fume damage was also observed near the Labrador Linerboard Mill at Stephenville.

Table 1.- Average temperatures and total precipitation for Newfoundland 1970-1974.

Year	Location	Temperatures - °F - (°C) May Min.	May Max.	June Min.	June Max.	July Min.	July Max.	Aug. Min.	Aug. Max.	Precipitation - Inches (cm) May	June	July	Aug.
1970	St. John's	35	53	42	59	51	68	52	67	4.31	3.68	3.49	4.00
"	"	(2)	(12)	(6)	(15)	(11)	(20)	(11)	(19)	(10.95)	(9.35)	(8.86)	(10.16)
1971	"	38	56	43	60	51	67	55	70	1.67	3.69	5.78	5.92
"	"	(3)	(13)	(6)	(16)	(11)	(19)	(13)	(21)	(4.24)	(9.37)	(14.68)	(15.04)
1972	"	32	50	50	68	49	66	51	66	4.11	3.84	0.76	4.65
"	"	(0)	(10)	(10)	(20)	(9)	(19)	(11)	(19)	(10.44)	(9.75)	(1.93)	(11.81)
1973	"	35	49	43	60	57	73	50	62	4.82	6.25	2.6	7.54
"	"	(2)	(9)	(6)	(16)	(14)	(23)	(10)	(17)	(12.24)	(15.88)	(6.60)	(19.15)
1974	"	28	57	31	82	33	79	41	76	4.28	2.41	3.59	5.67
"	"	(-2)	(14)	(-1)	(28)	(1)	(26)	(5)	(24)	(10.87)	(6.12)	(9.12)	(14.40)
1970	Gander	34	54	42	63	51	72	54	70	2.57	2.59	3.87	5.21
"	"	(1)	(12)	(6)	(17)	(11)	(22)	(12)	(21)	(6.53)	(6.58)	(9.83)	(13.23)
1971	"	40	60	43	62	51	70	54	71	0.98	2.27	3.1	3.13
"	"	(4)	(16)	(6)	(17)	(11)	(21)	(12)	(22)	(2.49)	(5.77)	(7.95)	(7.95)
1972	"	31	50	45	67	50	71	50	68	5.25	3.86	1.78	2.46
"	"	(-1)	(10)	(7)	(19)	(10)	(22)	(10)	(20)	(13.34)	(9.80)	(4.52)	(6.25)
1973	"	35	50	43	62	57	74	48	64	3.87	5.76	2.33	6.38
"	"	(2)	(10)	(6)	(17)	(14)	(23)	(9)	(18)	(9.83)	(14.63)	(5.92)	(16.21)
1974	"	26	58	29	82	33	79	40	80	2.80	4.19	1.99	2.07
"	"	(-3)	(14)	(-2)	(28)	(1)	(26)	(4)	(27)	(7.11)	(10.64)	(5.05)	(5.26)

Table 1 (Concluded)

Year	Location	Temperatures - °F - (°C) May Min.	May Max.	June Min.	June Max.	July Min.	July Max.	Aug. Min.	Aug. Max.	Precipitation - Inches (cm) May	June	July	Aug.
1970	Deer Lake	35	54	41	66	50	75	50	73	3.61	3.10	2.00	5.16
"	"	(2)	(12)	(5)	(19)	(10)	(24)	(10)	(23)	(9.17)	(7.87)	(5.08)	(13.11)
1971	"	37	62	40	65	48	73	50	72	1.65	2.39	2.48	5.36
"	"	(3)	(17)	(4)	(18)	(9)	(23)	(10)	(22)	(4.19)	(6.07)	(6.30)	(13.61)
1972	"	30	51	42	66	47	74	45	70	3.72	4.02	1.59	3.67
"	"	(-1)	(11)	(6)	(19)	(8)	(23)	(7)	(21)	(9.45)	(10.21)	(4.04)	(9.32)
1973	"	35	54	43	64	56	76	46	69	2.62	6.02	3.42	5.23
"	"	(2)	(12)	(6)	(18)	(13)	(24)	(8)	(21)	(6.65)	(15.29)	(8.69)	(13.28)
1974	"	25	57	25	87	32	85	31	87	1.40	0.87	3.54	2.47
"	"	(-4)	(14)	(-4)	(31)	(0)	(29)	(-1)	(31)	(3.56)	(2.21)	(8.99)	(6.27)

IMPORTANT FOREST INSECTS

Spruce Budworm, Choristoneura fumiferana (Clem.) - The current spruce budworm outbreak increased from 3,535,795 acres (1 430 887 hectares) in 1973 to 5,679,797 acres (2 298 534 hectares) in 1974. The outbreak now extends from Cape Ray north to Main Brook in the west, and east as far as Gander and Random Island. Larval numbers also increased from 9.2 per tree in 1973 to 22.3 per tree in 1974. The reasons for the increase in the extent and intensity of the outbreak are not thoroughly understood but the unusual spring and early summer weather conditions over the past three years are considered to be a major contributing factor. These have been favorable for budworm survival but unfavorable for the fungal disease caused by Entomophthora spp., which dropped from 35% effectiveness in 1973 to 20% in 1974. Table 2 shows the 1974 infestations by damage class per 1:250,000 scale topographic map sheets. The distribution and intensity of damage in the various Ranger Districts are illustrated in Figures 2, 3, 4 and 5. Table 3 shows the intensity of budworm outbreaks for 1972, 1973 and 1974.

In September, a large-scale egg-mass survey was conducted in all susceptible spruce-fir forests of the Island. The purpose of this survey was to determine the number of spruce budworm egg-masses per 100 square feet of foliage at each sample location. This information was used to estimate and forecast the severity of defoliation and mortality of forest stands by the budworm in 1975.

Table 2.- 1974 spruce budworm infestations by 1:250,000 scale topographic map sheets.

Map sheet	Region*	Total infest.	Light	Moderate	Severe
Blanc Sablon	W	285,952**	242,752	43,200	-
" "	"	(115 721)	(98 238)	(17 482)	-
Port aux Basques	W	42,368	42,368	-	-
" "	"	(17 146)	(17 146)	-	-
St. Anthony	W	73,920	73,920	-	-
" "	"	(29 914)	(29 914)	-	-
Sandy Lake	W	1,788,992	1,070,848	129,024	589,120
" "	"	(723 980)	(433 357)	(52 214)	(238 409)
Sandy Lake	C	247,104	134,464	79,360	33,280
" "	"	(100 000)	(54 416)	(32 116)	(13 468)
Port Saunders	W	567,104	251,712	15,104	300,288
" "	"	(229 499)	(101 864)	(6 112)	(121 522)
Bay of Islands	W	42,112	7,680	2,688	31,744
" "	"	(17 042)	(3 108)	(1 088)	(12 846)
Stephenville	W	777,984	569,856	24,192	183,936
"	"	(314 839)	(230 613)	(9 790)	(74 436)
Red Indian Lake	W	456,064	173,568	128,896	153,600
" " "	"	(184 563)	(70 241)	(52 162)	(62 160)
Red Indian Lake	C	699,840	501,312	149,312	49,216
" " "	"	(283 215)	(202 874)	(60 424)	(19 917)
Botwood	C	811,968	762,752	32,384	16,832
"	"	(328 592)	(308 675)	(13 105)	(6 812)
Botwood	W	77,184	1,984	24,576	50,624
"	"	(31 235)	(803)	(9 946)	(20 487)
Gander Lake	C	833,088	778,176	54,912	-
" "	"	(337 139)	(314 917)	(22 222)	-
Gander Lake	E	320,320	320,320	-	-
" "	"	(129 629)	(129 629)	-	-
Belleoram	C	74,816	55,808	19,008	-
"	"	(30 277)	(22 585)	(7 692)	-

*W = Western
C = Central
E = Eastern
** Acres
() Hectares

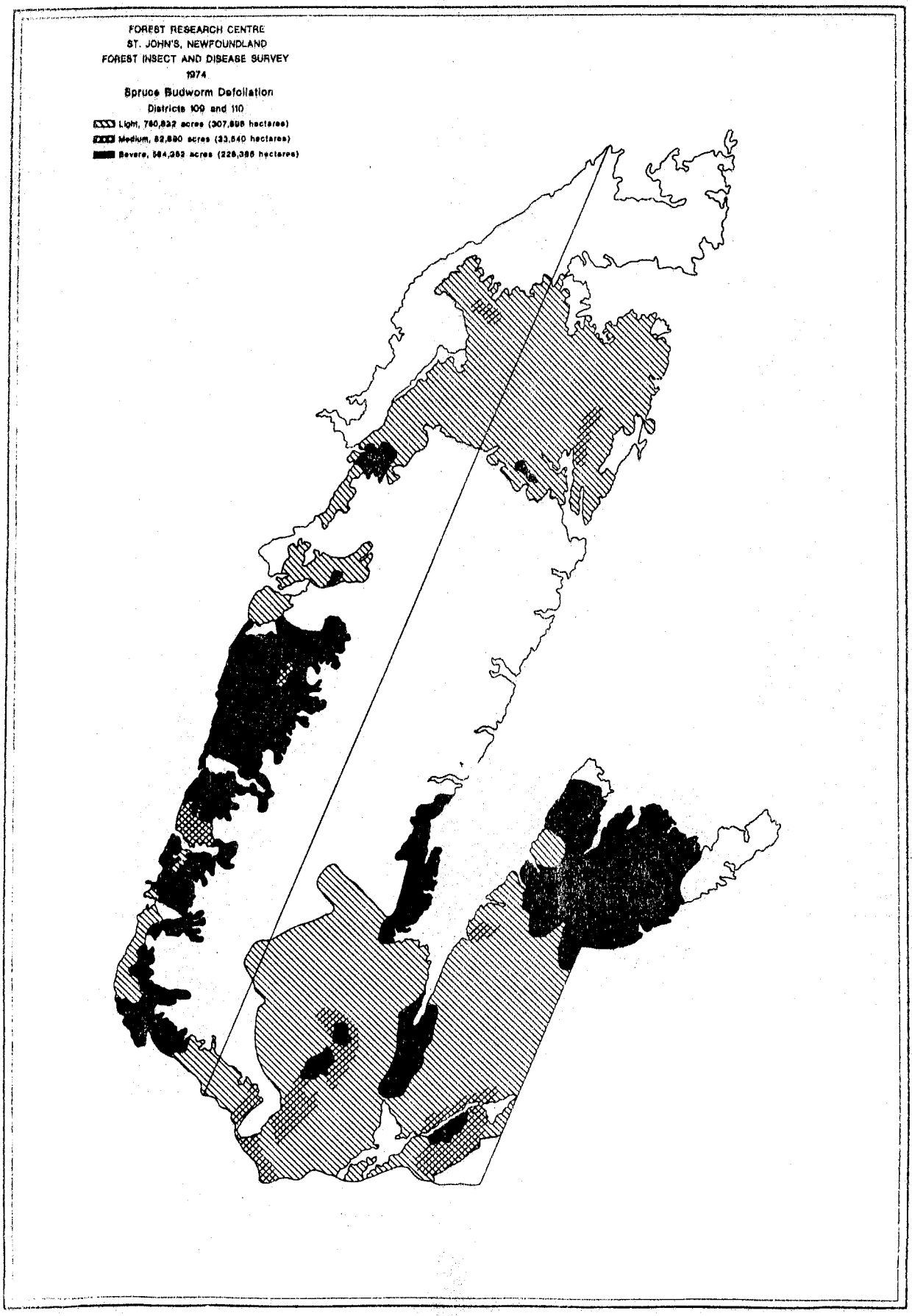
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Spruce Budworm Defoliation
Districts 109 and 110
Light, 760,832 acres (307,898 hectares)
Medium, 82,880 acres (33,540 hectares)
Severe, 564,382 acres (228,386 hectares)

Fig. 2

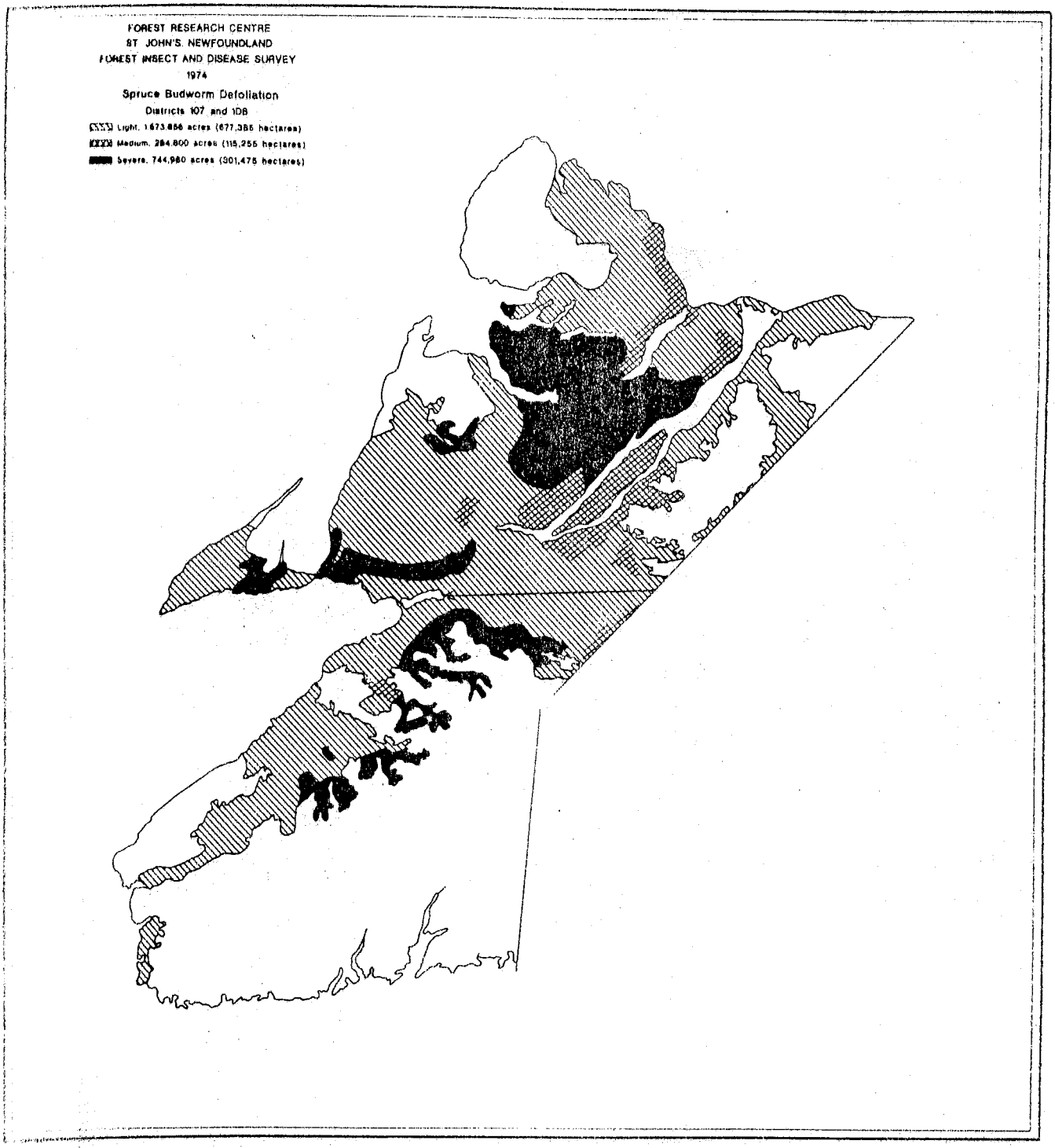
FOREST RESEARCH CENTRE
ST JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Spruce Budworm Defoliation
Districts 107 and 108
Light, 1,673,856 acres (677,386 hectares)
Medium, 284,800 acres (115,255 hectares)
Severe, 744,980 acres (301,475 hectares)

Fig. 3

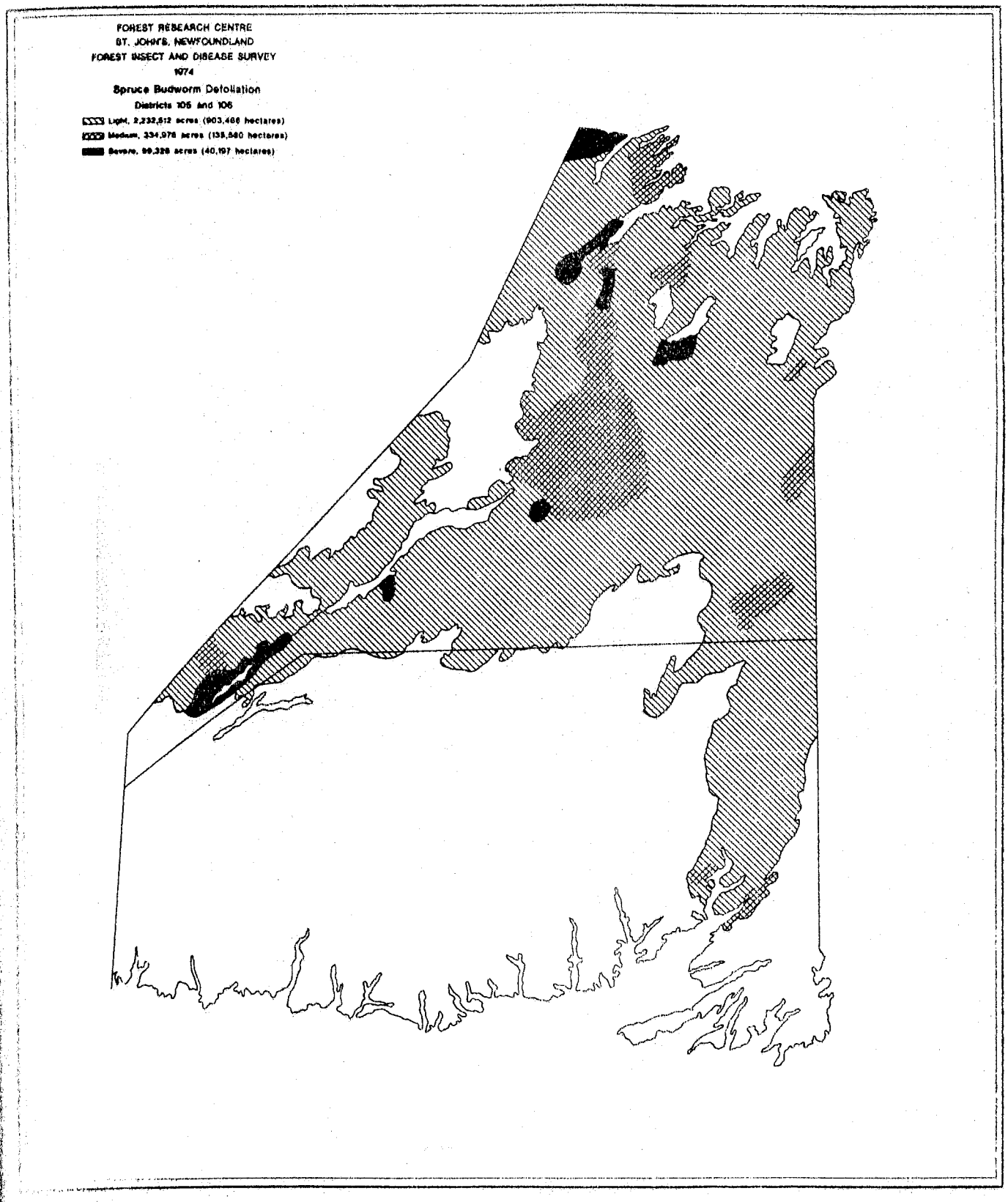
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Spruce Budworm Defoliation
Districts 105 and 106
Light, 2,232,512 acres (903,466 hectares)
Medium, 334,978 acres (135,560 hectares)
Severe, 99,328 acres (40,197 hectares)

Fig. 4

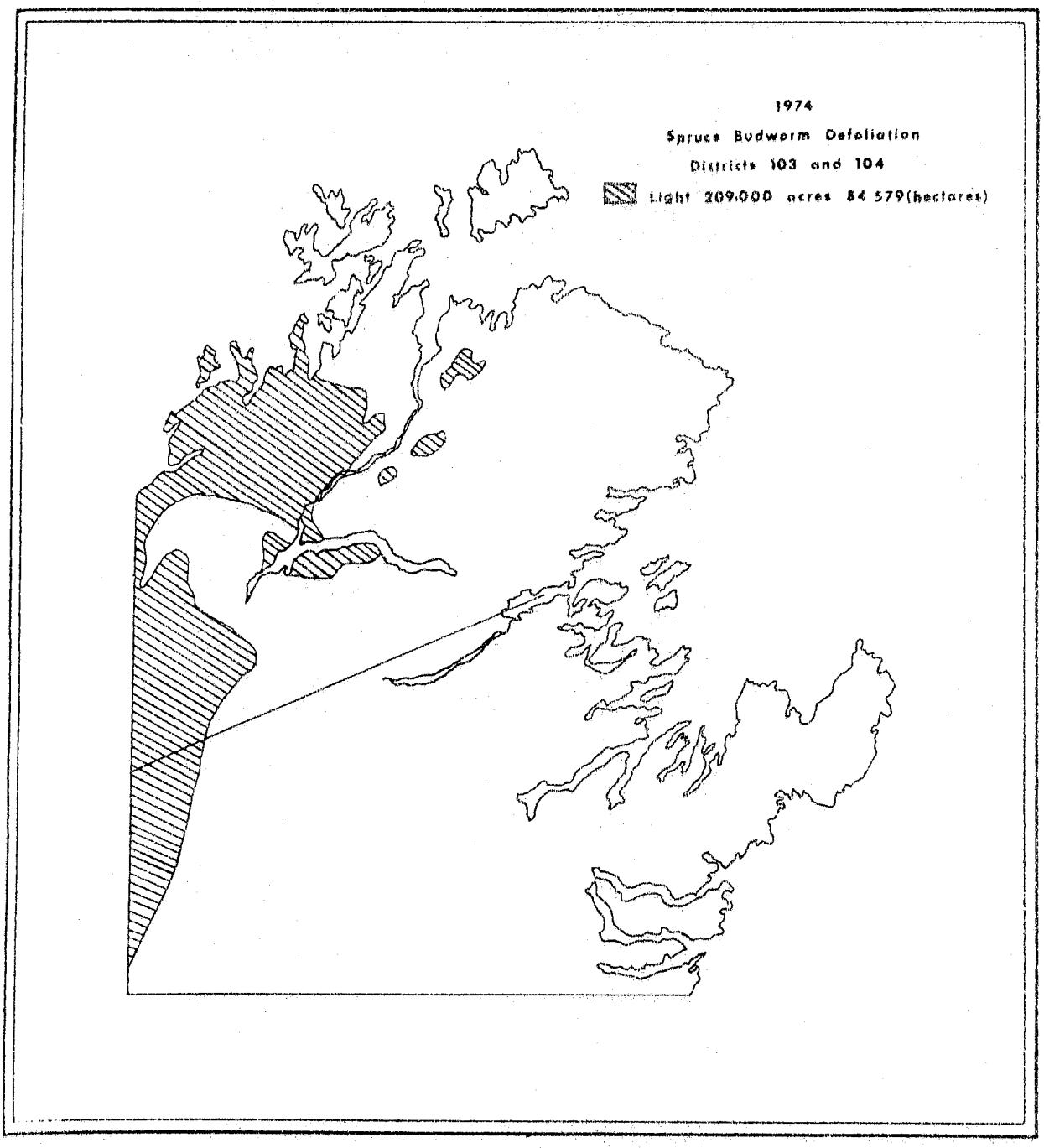
1974
Spruce Budworm Defoliation
Districts 103 and 104
Light 209,000 acres 84 579(hectares)

Fig. 5

Table 3.- Estimated intensity of spruce budworm outbreaks in Newfoundland, 1972, 1973 and 1974.

Location	F.I.D.S. District	Defoliation 1972	1973	1974
WESTERN				
S.W. end Ten Mile Lake	110	L	-	L
Castors River	110	L	L	S
Round Lake	110	-	-	L
10 mi. (16.1 km) E. Flowers Cove	110	-	-	M
Main Brook	109	-	-	L
4 mi. (6.4 km) N. Roddickton	109	-	L	M
Northwest Brook	109	-	L	S
Eastern Blue Pond	110	-	L	S
Bellburns	110	L	L	S
Portland Creek	100	L-M	L-M	S
River of Ponds	110	L	L	S
4 mi. (6.4 km) N. St. Pauls	110	L	L	S
Parsons Pond	110	L	L	M
4 mi. (6.4 km) N.E. Parsons Pond	110	S	M	M
St. Pauls Inlet	110	L-M	L-S	S
1 mi. (1.6 km) N. Sally's Cove	110	L	L	L
Baker's Brk.	110	L	L	S
Rocky Hr.	110	-	L	S
Deer Arm Brk.	110	-	L	S
Rocky Barachois Brk.	110	-	L	S
Jacksons Arm	109	L-M	L	S
Bonne Bay	110	M-S	S	L
Big Bonne Bay Pond	109	M-S	L	L-M
Old Man's Pond	108	M	L	L-S
Goose Arm	108	M	L	L-S
Penguin Arm	108	M	L	L
Deer Lake	108	-	L	M
Pynns Brk.	108	S	L	L
Pasadena	108	S	S	S
Long Hr.	108	L	L	M
Trout River Pond	110	L	S	-
Glide Lake	108	S	L	L
Hinds Brk.	108	M	-	L
Lewaneechjeech Brk.	108	-	-	L-M
Little Grand Lake	108	S	L	L-M
Island Pond	108	-	L	L
Corner Brook Lake	108	-	L	S

Table 3 (Continued)

Location	F.I.D.S. District	Defoliation 1972	1973	1974
Serpentine Lake	108	M-S	L	S
Cooks Brk.	108	M-S	M	S
Spruce Brk.	108	S	L	M
Pinchgut Lake	108	-	L	S
Camp 33 Rd.	108	-	-	L
Lady Slipper Rd.	108	-	M	S
Man of War Cove	108	-	S	L
Ship Cove	108	-	-	S
Whites Rd.	108	-	L	S
Barachois Brk.	107	M-S	S	S
Cold Brk.	108	L	L	S
Point au Mal	108	L	L	S
Flat Bay Brk.	107	L	S	S
Fishell's River	107	L	L	M-S
Robinsons River	107	L	L	L-S
St. Fintans	107	L	L	L
North Branch	107	-	-	L
Mummichog Prov. Park	107	-	L	L
Junction Brk.	108	-	L	L
Boot Brk.	109	-	-	L
1 mi. (1.6 km) E. Birchy Narrows	109	S	S	S
Sheffield Lake	109	L-M	M	M
N. side Birchy Lake	109	S	M	M
Adies Lake	109	-	-	M-S
Baie Verte	109	-	-	S
Flatwater Pond	109	-	-	S
Middle Arm	109	L-M	M	S
Wild Cove Pond	109	-	-	L
Purbecks Cove	109	-	L	M
Gull Pond (Baie Verte)	109	M	L	L
Baie Verte Jct.	109	-	-	L
CENTRAL				
Burnt Berry Brk.	106	S	L	S
West Pond	106	M-S	L	M-S
South Brk. (Hall's Bay)	106	-	L	L
Springdale	106	L	L	L
1 mi. (1.6 km) W. Kings Pt.	106	M	S	L
5 mi. (8.0 km) S.W. Kings Pt.	106	S	S	L
South Pond	106	-	L	M-S
Pauls Lake	106	-	L	M
Indian River	106	S	L	L
Great Gull Pond	106	-	L	M

Table 3 (Concluded)

Location	F.I.D.S. District	Defoliation 1972	1973	1974
S. end South Twin Lake	106	-	S	S
N. end North Twin Lake	106	-	L	M
E. side South Twin Lake	106	L	L	L
New Bay Pond	106	-	-	L
Middleton Lake	106	-	L	L
Grand Falls	106	-	-	L
Badger	106	-	L	M
Great Rattling Brk.	106	-	L	L-M
Diversion Lake	106	-	L	L
Lake Bond	106	-	L	M
Millertown Jct. Rd.	106	-	L	M
Mouth of Noel Paul's Brk.	106	-	L	M-S
Exploits Dam	106	-	L	L
3 mi. (4.8 km) S. Exploits Dam	106	-	L	L
Jct. Lake Ambrose & Victoria Lake rds.	106	-	L	L
Jct. Noel Paul's Brk. & Pudops Dam rds.	106	-	L	L
Hr. Round (Red Indian Lake)	106	-	L	S
Lake Ambrose	106	-	L	L
Pamehac Brk.	106	-	L	M
Lloyds River	105	-	L	S
Lloyds Lake	105	-	L	S
Conne River	105	-	-	L
St. Josephs Cove	105	-	-	M
Twillick Brk.	105	-	-	L
EASTERN				
Thwart Island	104	-	-	L
Lewisporte	104	-	-	L
Notre Dame Jct.	104	-	-	L
South Pond	104	-	-	M
New World Island	104	-	-	L
Island Pond	104	-	-	L
Conne River Pond	103	-	-	L
Greenwood Brk.	104	-	L	L
Gander Lake	104	-	-	L
Newton Lake	103	-	-	L
Watchers Brk.	103	-	L	L
Gambo Pond	103	-	L	-

L -- Light

M -- Moderate

S -- Severe

The survey was conducted by the Forest Insect and Disease Survey with the co-operation of the Provincial Forest Service and the pulp and paper companies who provided aircraft for sampling remote areas and manpower for counting the egg-masses.

The survey was completed on October 2 and a total of 745 locations was sampled. Egg-masses per 100 square feet of foliage ranged from zero at some locations to a high of 2,700 at others. A forecast for the 1975 spruce budworm outbreak was based on the results of this survey and is shown in Figure 6. Results of the 1973 sampling as compared with the results of 1974 sampling in the same location or proximity are summarized in Table 4.

Blackheaded Budworm, Acleris variana (Fern.) - There were six separate infestations reported on the Island and one in Labrador in 1974. Infestations reported in 1973 in the Logging School area collapsed in 1974 partly due to the spruce budworm defoliation of the trees and by the increase in parasitized larvae in the area. An infestation occurred along the Conche Road, 2 miles (3.2 km) east of Roddickton. Population levels averaged 31 larvae per tree and 100% of the current foliage was missing. Spruce budworm populations were also high and had contributed to most of the damage. Other infestations occurred at Crooked Feeder, near Deer Lake, and 4 miles (6.4 km) north of the Trans Canada Highway on the Hampden road. Larval populations of 7 and 13 per tree, respectively, caused 5% defoliation of mature black spruce.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	70	0.3	1.5	31.0

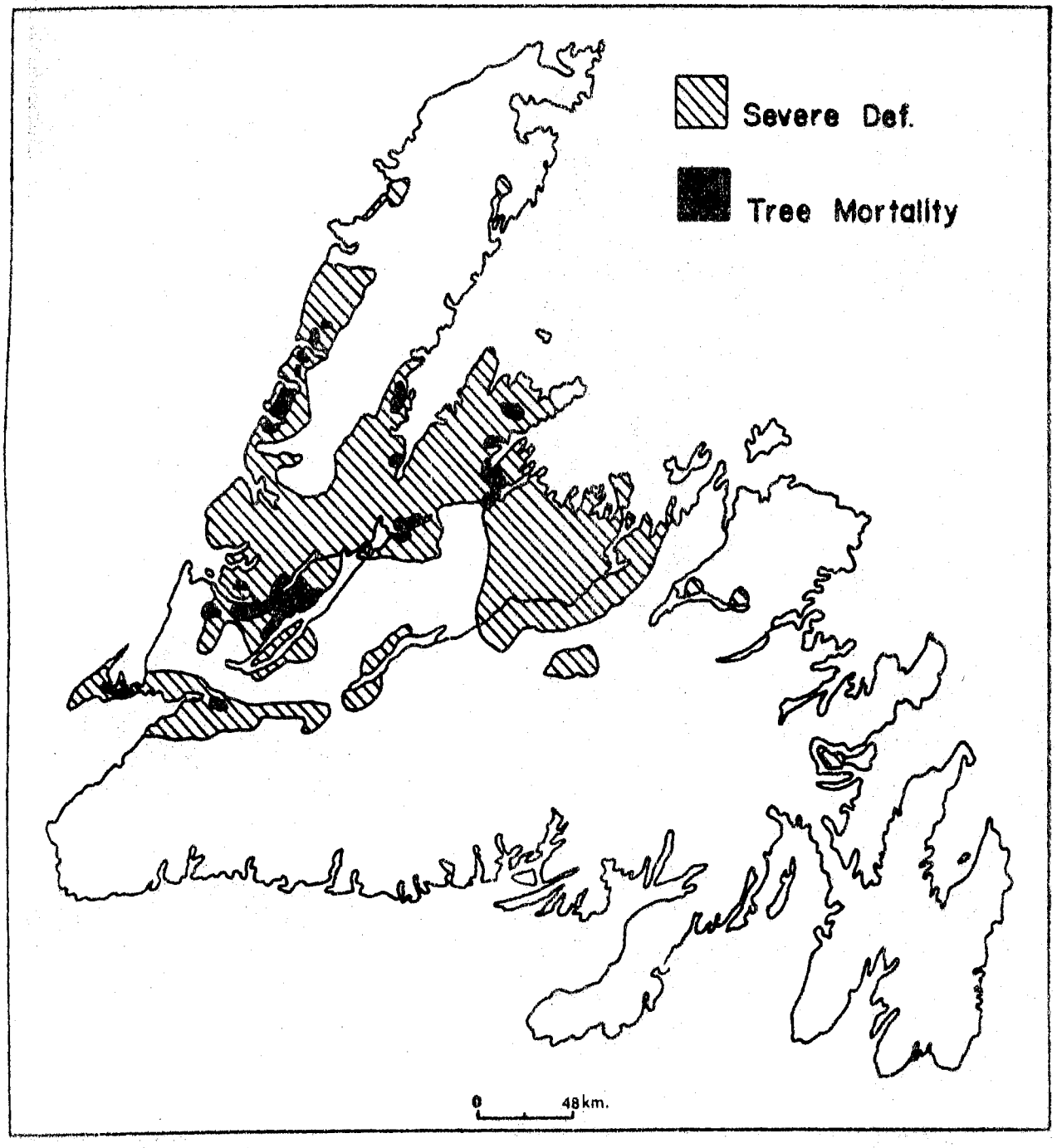

Fig. 6. Areas where severe defoliation and tree mortality are expected in 1975.

Table 4.- Results of spruce budworm egg mass sampling 1973 and 1974.

Plot locations	No. egg masses per 100 ft^2 foliage 1974	1973	Egg mass category* 1974	1973
WESTERN				
Corner Brook Lake	548	22	S	L
Grand Lake	429	55	S	L
Little Grand Lake	412	0	S	-
Lewaseechjeech Brk.	32	89	L	L
Paddle Pond	563	0	S	-
Lloyds River	244	35	S	L
Lloyds Lake	350	18	S	L
Lloyds Lake	83	113	L	M
6 mi. (9.7 km) W. Lloyds Lake	775	0	S	-
Barachois Brk.	173	22	M	L
Flat Bay Brook	280	0	S	-
Barachois Brk.	100	47	M	L
Southwest Brk.	269	0	S	-
Bottom Brk.	0	0	-	-
Hare Hill (Grand Lake)	49	73	L	L
Northeast Brk.		0		-
Blue Hill Brk.	205	0	M	-
Serpentine Lake	400	36	S	L
Serpentine Lake	88	0	L	-
Old Man's Pond	571	0	S	-
Penguin Arm	318	41	S	L
Trout River Pond	-	168	-	M
2 mi. (3.2 km) N. Goose Arm	-	35	-	L
Big Bonne Bay Pond	615	37	S	L
Adies Brk.	799	0	S	-
4 mi. (6.4 km) N. Humber River	471	17	S	L
Kitty's Brk.	471	0	S	-
Grand Lake	368	129	S	M
3 mi. (4.8 km) S. Glide Lake	297	114	S	M
Burnt Berry Brk.	2254	259	S	S
Lake Bond	772	0	S	-
Gull Pond (Baie Verte)	45	59	L	L
Middle Arm	357	0	S	-
Springdale	1157	0	S	-
Pauls Lake	590	18	S	L
South Pond	542	19	S	L
West Pond	586	74	S	L
Indian River	556	70	S	L
Sheffield Lake	265	109	S	M

Table 4 (Continued)

Plot locations	No. egg masses per 100 ft.^{2} foliage 1974	1973	Egg mass category* 1974	1973
T.C.H. 2 mi. (3.2 km) W. Hampden Jct.	395	39	S	L
S.E. corner Big Bonne Bay Pond	977	41	S	L
Jct. Cormack & Bonne Bay rds.	477	22	S	L
Glenburnie	815	0	S	-
Bellburns	73	13	L	L
Romaines	588	44	S	L
Pasadena	441	112	S	M
Rocky Barachois Brk.	888	23	S	L
Wiltondale	484	52	S	L
Blow-me-down Prov. Park	-	59	-	L
Old T.C.H. 5 mi. (8.0 km) fr. N.E. end Birchy Lake	543	0	S	-
Baie Verte Rd., 7 mi. (11.3 km) fr. T.C.H.	1033	14	S	L
Lady Slipper Rd.	694	94	S	L
1.5 mi. (2.4 km) S.E. McIvers	276	95	S	L
Man of War Cove	0	44	-	L
Point au Mal	0	67	-	L
Baie Verte Jct.	253	0	S	-
Jct. Lomond & Woody Point rds.	740	12	S	L
Lost Pond	-	25	-	L
Frenchmans Cove	404	59	S	L
Cox's Cove	1030	196	S	M
2 mi. (3.2 km) S. Crabbes River	197	31	M	L
South Branch	116	0	M	-
T.C.H. 1 mi. (1.6 km) E. Boot Brk.	1106	0	S	-
Fishell's River Rd.	0	0	-	-
Camp 180 Rd.	0	0	-	-
2 mi. (3.2 km) S. of North Branch River	33	0	L	-
Mummichog Prov. Park	218	44	S	L
Tompkins	0	0	-	-
N.E. end Codroy Pond	0	0	-	-
South Brk.	594	47	S	L
Spruce Brk.	568	51	S	L
Pinchgut Lake	1331	21	S	L
T.C.H. 3 mi. (4.8 km) W. Sheffield Brk.	797	17	S	L
Crooked Feeder	531	0	S	0
Pynns Brk.	368	94	S	L
Jct. Goose Arm & North Lake rds.	325	58	S	L
Ship Cove	1100	111	S	M
T.C.H. 5 mi. (8.0 km) W. Birchy Narrows	19	13	L	L
Steel Mtn. Rd. 1 mi. (1.6 km) fr. T.C.H.	450	25	S	L
T.C.H. 5 mi. (8.0 km) W. Baie Verte Jct.	317	0	S	-
1 mi. (1.6 km) N. Sally's Cove	-	22	-	L
Deer Arm Brk.	333	22	S	L
Lobster Cove	672	0	S	-
N.E. end Birchy Lake	1249	0	S	-

Table 4 (Continued)

Plot locations	No. egg masses per 100 ft.^{2} foliage 1974	1973	Egg mass category* 1974	1973
Barachois Prov. Park	1506	358	S	S
West Bay Centre	284	51	S	L
Burlington Rd., 7 mi. (11.3 km) fr. Baie Verte Rd.	521	102	S	M
Portland Creek	804	0	S	-
Jct. Reidville & Bonne Bay rds.	557	44	S	L
4 mi. (6.4 km) N. St. Pauls	373	14	S	L
Three Mile Rock	-	144	-	M
Crescent Lake Rd.	351	0	S	-
Whites Rd.	249	43	S	L
Belldowns Pt.	433	211	S	M
Cormack Rd., 0.5 mi. (0.8 km) W. Little Falls	671	14	S	L
Cache Valley Rd.	-	0	-	-
CENTRAL				
1.5 mi. (2.4 km) N.E. Phillips Head	357	0	S	-
6.0 mi. (9.7 km) N. Phillips Head	198	0	M	-
9.1 mi. (14.6 km) N. Phillips Head	-	0	-	-
4.2 mi. (6.8 km) N. Northern Arm (Pt. Leamington Rd.)	571	0	S	-
8.5 mi. (13.7 km) N. Northern Arm (Pt. Leamington Rd.)	955	42	S	L
2.0 mi. (3.2 km) N.W. Pt. Leamington	530	47	S	L
6.0 mi. (9.7 km) N.W. Pt. Leamington	550	0	-	-
0.4 mi. (0.6 km) W. Glovers Hr. Jct.	-	64	-	L
1.0 mi. (1.6 km) S. Leading Tickles	556	0	S	-
4.0 mi. (6.4 km) S.W. Badger	0	0	-	-
3.6 mi. (5.8 km) N. on Millertown Jct. Rd.	1364	124	S	M
2.4 mi. (3.9 km) S.W. Millertown Jct.	361	25	S	L
Jct. Noel Paul's Brk. & Exploits River	104	0	M	-
2.4 mi. (3.9 km) S.W. Buchans Jct.(Millertown Rd.)	128	0	M	-
0.2 mi. (0.3 km) S. Exploits Dam	62	0	L	-
3.0 mi. (4.8 km) S. Exploits Dam	0	0	-	-
7.4 mi. (11.9 km) S. Exploits Dam	28	0	L	-
Jct. Lake Ambrose & Victoria Lake rds.	-	0	-	-
8.0 mi. (12.9 km) W. Jct. Lake Ambrose Rd.	30	0	L	-
1.0 mi. (1.6 km) W. Lake Ambrose Jct.	-	0	-	-
17.9 mi. (28.8 km) W. Lake Ambrose Jct.	432	25	S	L
2.0 mi. (3.2 km) S. Lake Ambrose Jct.	176	0	M	-
Jct. Noel Paul's Brk. & Pudops Dam Rd.	122	0	M	-
T.C.H. 4 mi. (6.4 km) W. Badger	199	18	M	L

Table 4 (Concluded)

Plot locations	No. egg masses per 100 ft.^{2} foliage 1974	1973	Egg mass category* 1974	1973
T.C.H. 8.2 mi. (13.2 km) W. Badger	199	18	M	L
T.C.H. 20.5 mi. (33.0 km) W. Badger	556	800	S	S
T.C.H. 20.5 mi. (33.0 km) W. Badger	232	0	S	-
1.1 mi. (1.8 km) W. Gull Pond Rd.	-	33	-	L
5.0 mi. (8.0 km) W. Gull Pond	556	103	S	M
T.C.H. 6.0 mi. (9.7 km) E. Baie Verte Jct.	-	44	-	L
0.2 mi. (0.3 km) N. Jct. Kings Pt. & Springdale rds.	-	287	-	S
1.0 mi. (1.6 km) S. Kings Pt.	611	206	S	M
10.0 mi. (16.1 km) N.E. Kings Pt.	682	172	S	M

*Egg mass category

L -- 1-99 per 100 ft^2 foliage

M -- 100-239 per 100 ft^2 foliage

S -- 240+ per 100 ft^2 foliage

In central Newfoundland, infestations that occurred in the Sandy Lake-Noel Paul's, Lake Ambrose, Millertown Junction and Dawes Pond areas collapsed in 1974 mainly due to parasitism. In 1974 the highest larval counts were obtained at Badger Lake and 12 miles (19.3 km) from Bay d'Espoir on the Bay d'Espoir Road, with eight and 11 larvae per tree respectively. Defoliation and size of these areas were hard to ascertain due to the severity of the spruce budworm.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	27	0.3	2.6	10.7

In eastern Newfoundland three outbreaks of this insect caused light defoliation over an area of approximately 253,000 acres (102 386 hectares). The largest of these infestations, 203,993 acres (82 553 hectares) occurred in the Terra Nova area, extending from the western end of the Terra Nova National Park, north to Gambo and west to Lake St. John (Fig. 7). Larval populations in this area averaged 12 per tree and caused 20% defoliation.

The second most significant outbreak occurred on the Burin Peninsula, where larval numbers averaging 22 per tree were recorded. However, this insect, combined with the balsam fir sawfly and the balsam woolly aphid, which were present in this area for a number of years, caused extensive damage to an estimated 47,000 acres (19 020 hectares) of balsam fir stands, where some mortality also resulted.

A smaller area, consisting of about 2,000 acres (809 hectares) between St. Phillips and Paradise was also infested. Larval numbers averaging 58 per tree caused an estimated 10% defoliation.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	79	0.3	8.3	101.7

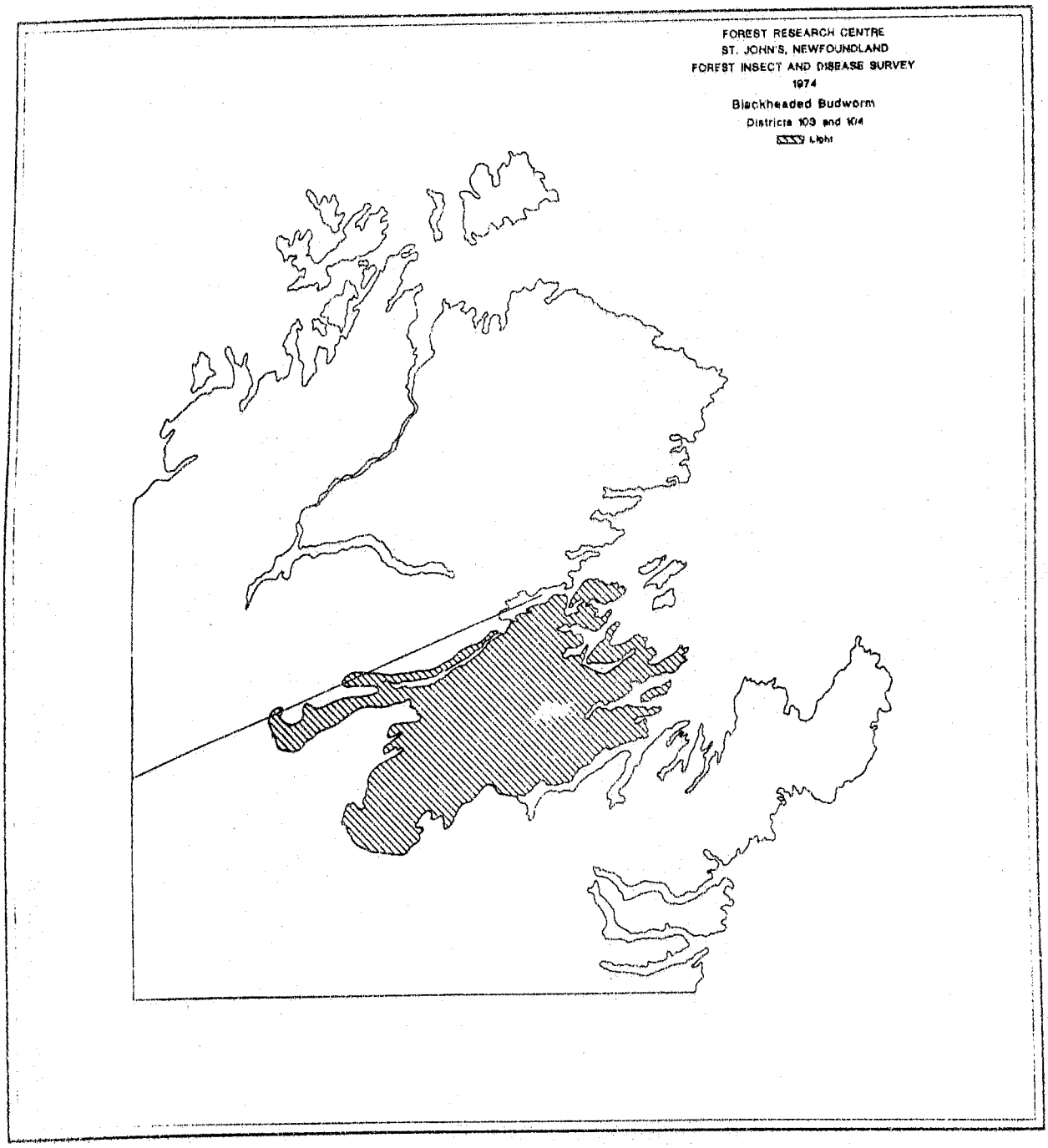
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Blackheaded Budworm
Districts 103 and 104
Light

Fig. 7

In Labrador the outbreak continued for the second consecutive year and covers an area of 174,700 acres (70 699 hectares) throughout fir-spruce stands in the Goose Bay-Happy Valley area, west along the Churchill River to Gull Lake, along the Kenamu River, 7 miles (11.3 km) south of Lake Melville and along the White Bear River near Sandwich Bay (Fig. 11). Defoliation was light in all areas except in a 4-mile (6.4 km) section along the Kenamu River where moderate defoliation was observed. Severe defoliation and a few patches of dead trees occurred along the White Bear River due to defoliation by both this insect and the balsam fir sawfly.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	2	1.7	9.2	32.0

Eastern Hemlock Looper, Lambdina fiscellaria fiscellaria (Guen.) - Collections in western Newfoundland show an average of 2.2 per tree in the area from Codroy Pond to Gallants. No noticeable defoliation can be attributed to the looper because of the spruce budworm damage, but high looper counts of 20, 21 and 14 larvae per sample were collected at South Branch, Robinsons and North Branch, respectively. Sampling points are shown in Fig. 8.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	52	0.3	1.3	7.0

In eastern Newfoundland a small infestation still persisted in the Salmonier Valley on the Avalon Peninsula. Larval populations were 14 per tree and a fungal disease, caused by Entomophthora spp., was effective in containing the infestation.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	22	0.3	8.1	41.7

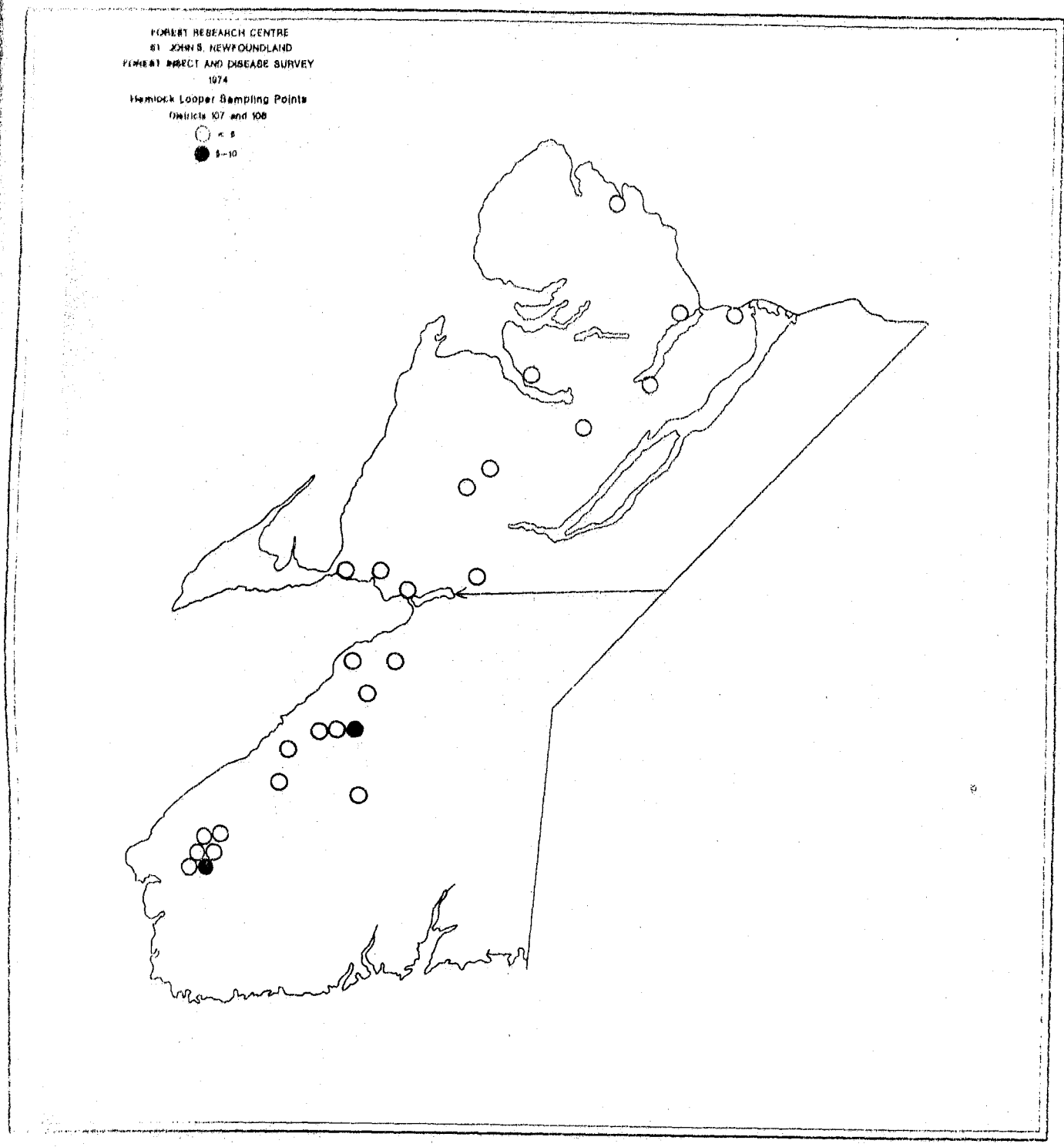
FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
1974
Hemlock Looper Sampling Points
Districts 107 and 108
≤ 5
5–10

Fig. 8

Balsam Fir Sawfly, Neodiprion abietis complex - This sawfly caused severe damage in balsam fir stands in three areas of the Province. In western Newfoundland, larval populations of 21 per tree caused an estimated 60% defoliation of immature fir over 3,000 acres (1 214 hectares) in the Spruce Brook-Gallants area (Fig. 9). The severe defoliation and crown mortality of balsam fir regeneration of 1973 was further weakened by moderate defoliation by the spruce budworm and it is expected that mortality will occur in the Gull Pond, Whites Road, Blue Ponds and Georges Lake areas.

In eastern Newfoundland, the sawfly has been present in the Marystown area for the fifth consecutive year. Larval numbers of 112 per tree were less than half that of 1973 but the area infested increased from 6,000 acres (2 428 hectares) to 47,000 acres (19 020 hectares) with a high of 90% defoliation to balsam fir (Fig. 10). Approximately 50% defoliation occurred between Marystown and Mooring Cove. Defoliation estimates made throughout the infestations were 40% at Little Bay, 90% at Lewins Cove and 20% at South West Arm and Salt Pond. About 5% mortality has occurred in some of these areas where severe damage was previously caused by the balsam woolly aphid.

In Labrador, approximately 7,470 acres (3 023 hectares) of balsam fir were defoliated (Fig. 11) and 99 acres (40 hectares) were killed by the balsam fir sawfly associated with the blackheaded budworm along the White Bear River, 10 miles (16.1 km) from Sandwich Bay.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	27	0.3	55.6	700.0

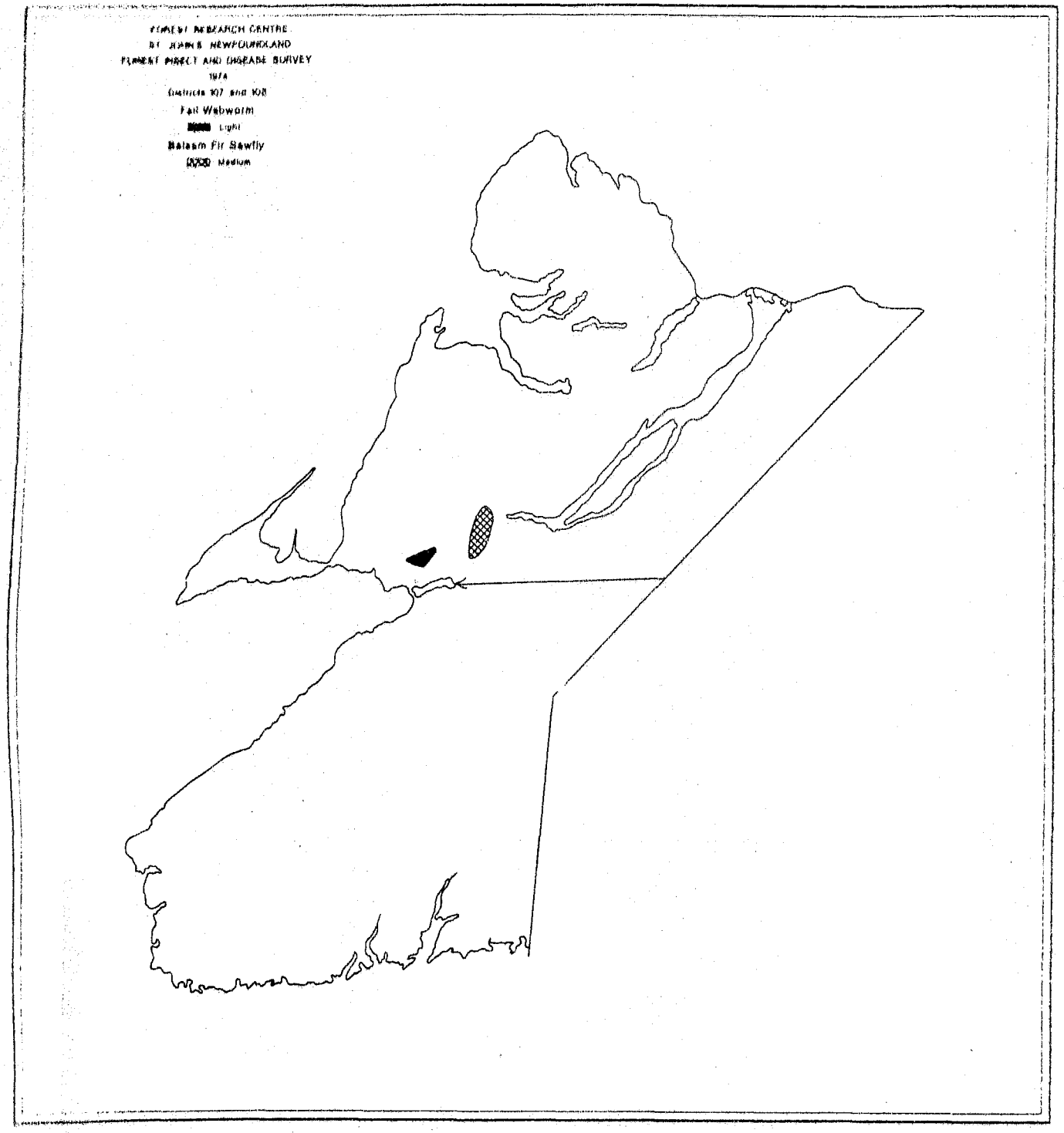
FOREST RESEARCH CENTRE
ST JOHN'S NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Districts 107 and 108
Fall Webworm
Light
Balsam Fir Sawfly
Medium

Fig. 9

FOREST RESEARCH CENTRE
ST. JOHN'S, NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Balsam Fir Sawfly
Districts 101 and 102
Severe

Fig. 10

FOREST RESEARCH CENTRE
ST JOHN'S NEWFOUNDLAND
FOREST INSECT AND DISEASE SURVEY
1974
Blackheaded Budworm and Balsam Fir Sawfly Defoliation
LABRADOR
Blackheaded Budworm..... Light–Medium
Blackheaded Budworm and Balsam Fir Sawfly.. Light–Medium

Fig. 11

Balsam Woolly Aphid, Adelges piceae (Ratz.) - The boundary of the balsam woolly aphid infestation remained unchanged in 1974. However, population levels increased in the Clode Sound area between Port Blandford and Bunyans Cove and in the Placentia area between Point Verde and Southeast Arm. Stem attack was very noticeable in the Port Blandford area.

Larch Casebearer, Coleophora laricella (Hbn.) - Infestations of the larch casebearer were last recorded in Newfoundland in 1966. In 1974 population levels caused severe damage to immature tamarack stands in the Lake Ambrose and Cobblers Brook areas (Table 5). These stands were about one acre (0.4 hectares) in size and browning of foliage was estimated at 90%. Light to moderate browning of tamarack was recorded elsewhere throughout the Terra Nova National Park, between Heyles Brook and Clarenville and near Torbay.

Light damage also occurred at Junction Brook in western Newfoundland and near Paddys Pond, Pouch Cove and St. John's in eastern Newfoundland. The infestation reported in the Pasadena-Deer Lake area in 1973 collapsed in 1974 mainly due to parasitism.

Tables 5 and 6 contain a list of larch casebearer counts and parasites recovered.

Larch Sawfly, Pristiphora erichsonii (Htg.) - A small infestation at Pistolet Bay continued for the seventh consecutive year. The area infested is approximately two square miles (5.2 km^2) and is located at the intersection of the Cook's Harbour and St. Anthony roads. In 1974, 10% branch mortality was recorded in the 30-year-old stand. An average of 17 first instar larvae per tree was collected and defoliation was recorded at 10%.

Table 5.- 1974 Larch casebearer counts.

Location	Stand vigour	Stand defoli-ation	Avg. No. of cases per branch sample
Stephenville Road	M	L	0.2
Logging School Road	M	L	0.3
Fischell's River	M	L	4.6
3 mi. (4.8 km) W. of Hampden Jct.	V	L	1.0
2.3 mi. (3.7 km) S. of Snowshoe Pond	V	L	0.2
1 mi. (1.6 km) W. of Lake Ambrose	V	L	0.9
1.5 mi. (2.4 km) W. of Lake Ambrose	V	M	9.0
21.5 mi. (34.6 km) fr. Badger (Buchans Road)	M	M	1.1
Salton's Brook	U	M	3.5
Cobblers Brook	M	S	11.0
1.5 mi. (2.4 km) W. of Charlottetown Jct.	V	M	3.7
1.1 mi. (1.8 km) W. of Park Headquarters	U	L	1.7
S.W. Brook (T.N.N.P.)	M	M	5.3
1.7 mi. (2.7 km) E. of Appleton	M	L	0.3
1.7 mi. (2.7 km) E. of Appleton	V	L	3.7
Glenwood Prov. Park	M	M	0.9
3.3 mi. (5.3 km) E. of Benton Jct.	M	M	1.1
Torbay	M	M	2.8

L -- Light
M -- Moderate
S -- Severe
V -- Vigorous
M -- Moderately vigorous
U -- Unthrifty

Table 6.- Parasites reared from larch casebearer larvae in 1974.

Location	No. collections	No. parasites	Species	% parasitism
Lake Ambrose	154	61	Agathis pumila R.	40
		16	Dicladocerus sp.	-
1.5 mi. (2.4 km) W. of Charlottetown	61	22	Agathis pumila R.	36
T.N.N. Park (S.W. Brk.)	100	25	Agathis pumila R.	25

Larval numbers of 47 per tree were found in a two acre (0.8 hectares) stand on the Roddickton road three miles (4.8 km) west of Main Brook junction. Defoliation was estimated at 20%.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	7	1.0	28.4	90.0

Trapping records of the masked shrew, Sorex cinereus cinereus Kerr., show that population levels in the Hall's Bay and Terra Nova census plots were about the same as in 1973. However, in the Paddy's Pond and Wiley Brook plots, population levels were considerably lower. Reasons for the lower population levels in the latter two plots are not known, but extremely wet weather prevailed during the ten-day trapping period in these areas and this may have had some effect. Trapping records from 1966 to 1974 are as follows:

Estimated number of shrews per acre

Census plot	Sept. 1966	Sept. 1967	Sept. 1968	Oct. 1969	Sept. 1970	Sept. 1971	Sept.* 1972	Sept.* 1973	Oct.* 1974
Hall's Bay	8.71	11.33	3.35	2.87	2.85	2.46	2.18	3.48	3.92
Glovertown	0.00	0.00	0.44	1.39	plot discontinued				
Terra Nova	0.00	0.00	0.67	2.87	3.40	2.86	3.05	3.92	4.36
Paddy's Pond	plot established in 1970				0.00	0.61	1.31	3.93	1.74
Wiley Brook	plot established in 1970				4.96	3.57	2.61	3.92	2.61

*Ten-day trapping period

Birch Casebearer, Coleophora fuscedinella (Zell.) - The boundaries of the birch casebearer remained about the same in western and central districts but extended in the east as far as Port Blandford.

In western Newfoundland, defoliation was light from Codroy to Deer Lake, throughout White Bay, on the Baie Verte Peninsula and along the northwest coast as far as Bellburns. Moderate browning was recorded in the Goose Arm, Cormack and Bonne Bay road areas.

In central Newfoundland, light browning occurred in the Bay d'Espoir area and moderate to severe damage was recorded at Indian River Provincial Park, South Brook to Roberts Arm, Kings Point, Badger to Star Lake, Beothuck Provincial Park and near Bishops Falls and Glenwood.

In eastern Newfoundland moderate to severe damage occurred about a mile (1.6 km) along the Trans Canada Highway near Gambo and in the western end of the Terra Nova National Park. Defoliation was generally light in the remaining areas as far east as Port Blandford.

Year	No. of collections	No. of larvae per tree Min.	Avg.	Max.
1974	44	0.3	7.2	133.0

Birch Leafminer, Fenusa pusilla (Lep.) - Population levels continued to increase in western Newfoundland in 1974 and damage was light from the Codroy Valley to Bonne Bay and throughout the Baie Verte Peninsula. In central Newfoundland, the leafminer caused 30-60% browning of roadside white birch regeneration and saplings throughout the districts, with moderate patches occurring in the Glenwood area. In eastern Newfoundland, light browning occurred throughout the district as far east as Clarenville.

Year	No. of collections	No. of larvae per tree Min.	Avg.	Max.
1974	37	0.3	19.9	200.0

Satin Moth, Stilpnotia salicis (Linn.)- This insect caused severe defoliation for the second consecutive year in many towns having ornamental poplars. In the Stephenville-Stephenville Crossing area, Badger, Norris Arm, Glovertown, Terra Nova Village, Port Blandford, Clarenville, St. John's and Torbay, defoliation ranged from 50 to 75%. In the Badger and Torbay areas mortality occurred to clumps of mature silver poplar. The parasite Apanteles solitarius Ratz. was common in most areas in 1974.

Year	No. of collections	No. of larvae per tree Min.	Avg.	Max.
1974	20	0.3	11.6	200.00

Rusty Tussock Moth, Orgyia antiqua (L.) - This insect was found on many species of trees and shrubs throughout western and central Newfoundland. In western Newfoundland larvae averaged two per tree from Tompkins to St. George's and caused about 5-10% defoliation. In central Newfoundland larvae averaged one per tree but caused no defoliation. This is the first increase since 1969 when population levels began to decline, one year prior to the collapse of the hemlock looper outbreak.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	50	0.3	1.2	22.0

Fall Webworm, Hyphantria cunea (Dru.)- The infestation which began in 1973 in the Stephenville-Black Duck area continued in 1974. Larvae averaged 34 per tree on white birch, pin cherry and alder regeneration. Defoliation was estimated at 30%.

Year	No. of collections	No. of larvae per tree		
		Min.	Avg.	Max.
1974	3	1.3	34.4	100.0

OTHER NOTEWORTHY INSECTS

Species	Host(s)	Locality	Average per tree	No. of collections
Acronicta dactylina (Grt.) Owlet moth	W	3.0 mi. (4.8 km) W. on Churchill Rd. (Labrador)	0.2	1
Acronicta grisea Wlk. Gray dagger moth	wB	5.0 mi. (8.0 km) W. on Churchill Rd. (Labrador)	1.0	1
Adelges abietis (Linn.) Eastern spruce gall aphid	wS	Hillview	50.0	1
Adoxus obscurus (Linn.) Western grape rootworm	W	Gate on Terra Nova Rd., 4.4. mi. (7.1 km) N. of Pt. Leamington	2.4	2
Anacampsis innocuella Zell. Poplar leaf roller	tA	N.W. Gander River & Gander Lake, District 106	4.9	10
Anatis mali Say Eye-spotted lady beetle	bS	6.0 mi. (9.6 km) W. of Catamaran Prov. Park	0.3	1
Anoplodera chrysocoma (Kby.) Long-horned beetle	Boston Ivy	St. John's (Pippy Park)	1.0	1
Anoplodera mutabilis (Newn.) Long-horned beetle	bF	9.0 mi. (14.5 km) S. of T.C.H. on Bay d'Espoir Rd.	0.3	1
Anoplodera tibialis Lec. Long-horned beetle	tL	4.4 mi (7.1 km) S. of Pt. Leamington	0.5	1
Anoplonyx luteipes (Cress.) Marlatt's larch sawfly	tL	Goobies, Marystown, 4.0 mi. (6.4 km) E. of George's Bk., 4.4 mi. (7.1 km) S. of Pt. Leamington, Jct. Lomond and Woody Pt. Rds., Junction Bk., Renews, Hearts Desire, Witless Bay Line	0.6	10

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Archips rosanus Linn. European leaf roller	W, Misc. shrub	Hall's Bay shrew plot	8.5	2
Arhopalus sp. Long-horned beetle	wB	Deer Lake	1.0	1
Biston cognataria (Gn.) Pepper-and-salt moth	bF	Little Bay	0.3	1
Brachyrhinus singularis (Linn.) Clay-coloured root weevil	bF	1.7 mi. (2.7 km) S. of Flatrock Jct., Old road to Flatrock	0.2	2
Campaea perlata (Gn.) Fringed looper	wB, Mo, pCh, Sal	Winterland, Wiltondale, N.W. Gander River & Gander Lake, 5.0 mi. (8.0 km) E. of Badger, 0.5 mi. (0.8 km) N. of New Perlican	0.5	5
Carabus nemoralis Mull. A ground beetle	wB	Deer Lake	1.0	1
Caripeta divisata Wlk. Gray spruce looper	bF, bS, wS	Waterville, 0.9 mi. (1.4 km) E. Jumpers Bk., P.S. Plot #16, South Branch, Districts 101 and 103	2.0	13
Cephalcia sp. A web-spinning sawfly	bS	7.0 mi. (11.3 km) N. of Head of Bay d'Espoir	0.3	1
Choristoneura conflictana (Wlk.) Large aspen tortrix	tA, Sal, W, Silver maple	3.4 mi. (5.5 km) E. of Jumpers Bk. 0.8 mi. (1.3 km) E. of Jumpers Bk. (old rd.), Gillams, District 106	6.4	14

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Chrysomela falsa Brown Willow leaf beetle	tA, W	Glenwood, 2.0 mi. (3.2 km) W. on Churchill Rd.	12.0	2
Chrysomela mainensis mainensis Bech. Alder leaf beetle	Sal	Baie Verte Jct., Barachois Bk., 6.5 mi. (10.5 km) S. of T.C.H. on Bay d'Espoir Rd.	7.1	3
Clepsis persicana Fitch White-triangle leaf roller	bF	Lake Ambrose (Harpoon Hill)	0.2	1
Croesus latitarsus Nort. Dusky birch sawfly	wB	St. John's (Pippy Park)	23.3	1
Ctenicera sp. A click beetle	tA, bF, bS	1.8 mi. (2.9 km) S.W. of Badger, Holyrood Prov. Park, Jonathan's Pond Prov. Park	0.3	3
Dendroides concolor Newn. Fire-coloured beetle	bF	Whelan's Pond Rd. (3.0 mi. (4.8 km) from Salmonier Rd.)	0.3	1
Diacrisia virginica (Fabr.) Yellow woollybear	W	3.0 mi. (4.8 km) W. on Churchill Rd.	0.2	1
Dimorphopteryx melanognathus Roh. Birch-alder sawfly	wB	1.8 mi. (2.9 km) E. on Garnish Rd.	2.0	1
Dioryctria reniculelloides M. & M. Spruce coneworm	bF, bS, wS	Norris Arm, Junction Bk., 2.0 mi. (3.2 km) E. of Deer Lake (Airport Rd.), Glenburnie, Districts 103, 105, 106, 107 and 109	1.5	33
Diprion hercyniae (Htg.) European spruce sawfly	bS, wS	Hodges Cove, 3.3 mi. (5.3 km) E. of Thorburn Lake Park, 4.4 mi. (7.1 km) S. of Pt. Leamington, Coal Brook, Glenburnie, Lomond, Districts 102, 108 and 109	1.5	22

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Ectropis crepuscularia (Schiff.) Flat-faced looper	bF	Snook's Arm Rd. (1.5 mi. (2.4 km) S. La Scie Rd.)	0.3	1
Eucordylea atrupictella Dietz. Spruce micro moth	bF	3.3 mi. (5.3 km) W. of T.N.N.P. boundary	0.3	1
Eupithecia sp. Brown spruce looper	bF, bS, wS tL	Marystown, Barachois Bk., 0.5 mi. (0.8 km) S. of Jefferys' Stn., Fishell's River, 2.0 mi. (3.2 km) S. of Hawkes Bay, Districts 101, 103, 108 and 109	0.5	35
Eupithecia transcanadata Mack. Conifer looper	bS	LaManche Valley Prov. Park	0.3	1
Fenusa dohrnii (Tischb.) European alder leafminer	Sal, wB	Sandy Hr. River, Glenwood, 1.8 mi. (2.9 km) N. of St. Veronica's, Blow-Me-Down Prov. Park, District 106	10.5	10
Feralia jocosa (Guen.) Red-marked caterpillar	bF, bS	S.W. Arm-Burin, 0.5 mi. (0.8 km) N. of Salt Pond, 4.4 mi. (7.1 km) S. of Pt. Leamington, P.S. Plot #16, Main Dam Rd. (Deer Lake), Squires Mem. Park, La Scie Rd., Districts 101, 103 & 107	0.4	30
Griselda radicana Wlshm. Red-striped spruce shoot moth	bF, bS, wS	St. Phillips, Crooked Feeder, Whelan's Pond Rd., Bellevue Beach Prov. Park, Charlottetown Jct.	0.7	6
Halisidota maculata (Harr.) Spotted tussock moth	Sal	5.0 mi. (8.0 km) E. of Deer Lake on T.C.H.	3.0	1

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Hemichroa crocea (Four.) Striped alder sawfly	wB, Sal	1.8 mi. (2.9 km) E. of Garnish Road, Paddy's Pond	92.0	2
Herculia thymetusalis Wlk. Spruce needleworm	wS	Mummichog Prov. Park	0.7	1
Heterarthrus nemoratus (Fall.) Birch leaf mining sawfly	wB, yB	Tompkins, 9.0 mi. (14.5 km) S. of T.C.H. (Bay d'Espoir Rd.), Burnt Pt. (T.N.N. Park)	17.1	3
Hylobius sp. Root collar weevil	bF	Jct. Lady Slipper Rd. and T.C.H. Robinsons River Rd. (9.0 mi. (14.5 km) E. of T.C.H.), Square Pond Prov. Park.	0.2	3
Mindarus abietinus Koch Balsam twig aphid	bF	7.0 mi. (11.3 km) N. of Head of Bay d'Espoir, Whites Rd. (1.0 mi. (1.6 km) W. of T.C.H.), 5.0 mi. (8.0 km) N. of Trout Bk., 4.0 mi. (6.4 km) E. of T.C.H. (Camp 33 Rd.), District 101	3.9	8
Monochamus scutellatus (Say) White-spotted sawyer	bF, tL	16.2 mi. (26.1 km) W. of Grand Falls (Sandy Lake Rd.), 4.4 mi. (7.1 km) S. of Pt. Leamington, 9.0 mi. (14.5 km) E. of T.C.H. (Robinsons River Rd.)	0.8	3
Nadata gibbosa (J.E. Smith) Green oak caterpillar	wB, W	Burnt Pt. (T.N.N.P.), 2.0 mi. (3.2 km) S. of Lochleven, P.S. Plot #17, Hatchet Cove	0.4	4
Nematus limbatus (Cress.) Willow sawfly	W, pCh	St. Catherines, 12.3 mi. (19.8 km) N. of Head of Bay d'Espoir, 3.9 mi. (6.3 km) N. of Northern Arm, Cooks Bk., Pasadena, District 109	19.0	11

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Neodiprion sertifer (Geoff.) European pine sawfly	-P	Windsor Lake (First record for Nfld.)	6.7	1
Nepytia canosaria (Wlk.) False hemlock looper	bF, wB	Whelan's Pond Rd., Hatchet Cove, 0.5 mi. (0.8 km) N.E. of Head of Bay d' Espoir, 4.4 mi. (7.1 km) S. of Pt. Leamington, 13.0 mi. (20.9 km) E. of T.C.H. on Camp 180 Rd., 1.0 mi. (1.6 km) from T.C.H. on Robinsons River Rd., Districts 108 and 110.	0.6	15
Nycteola cinereana N. & D. Poplar leaf tier	wB, W	5.7 mi. (9.2 km) S.W. of gate on N.W. Gander River Rd., Jct. Bay d'Espoir Rd. and T.C.H., 0.5 mi. (0.8 km) W. of Hampden Jct. on Cormack Rd., 6.5 mi. (10.5 km) S. of T.C.H. on Bay d'Espoir Rd.	0.5	4
Nyctobia limitaria (Wlk.) Green balsam looper	bF, bS	Notre Dame Jct. Prov. Park, Green Pt. 1.0 mi. (1.6 km) S. of Lomond Rd., Districts 101, 102, 103, 105, 106, 107, 108 and 109.	0.7	55
Nymphalis antiopa (L.) Mourningcloak butterfly	W	0.5 mi. (0.8 km) N.W. of Stephenville Xing, Goose Bay, Otter Creek, 5.0 mi. (8.0 km) W. on Churchill Rd.	6.1	6
Ontholestes cingulatus Grav. A rove beetle	bS	6.5 mi. (10.5 km) from T.C.H. (Dawes Pond Rd.).	1.0	1
Ortholepis pasadamia Dyar Birch micro moth	wB	5.7 mi. (9.2 km) S.W. of Gate (N.W. Gander River Rd.).	1.3	1

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Papilio ajax L. A swallowtail	Wild parsnip	6.5 mi. (10.5 km) S. of Main Bk. Rd. (Roddickton Rd.).	2.0	1
Parorgyia plagiata (Wlk.) Pine tussock moth	bF, wS	3.0 mi. (4.8 km) S. of T.C.H. (Crescent Lake Rd.), 10.5 mi. (16.9 km) from Nicholsville (North Lake Rd.).	0.5	2
Phratora purpurea purpurea Brown Aspen leaf beetle	tA, W silver maple	10.5 mi. (16.9 km) S.W. of Badger, Badger, Tors Cove Rd., Springdale 5.1 mi. (8.2 km) from T.C.H. (Dawes Pond Rd.), 4.0 mi. (6.4 km) N. of Charleston, 1.0 mi. (1.6 km) E. of Bishops Falls on T.C.H., Indian River Prov. Park.	0.6	8
Phyllocnistis populiella Chamb. Aspen leafminer	tA, bPo	Deer Lake, Goose Bay (First record for Labrador).	4.3	3
Pikonema alaskensis (Roh.) Yellowheaded spruce sawfly	bS, wS	0.5 mi. (0.8 km) W. of New Perlican St. Phillips, 4.4. mi. (7.1 km) S. of Pt. Leamington, 12.0 mi. (19.3 km) from T.C.H. on Bonne Bay Rd., Main Bk. Rd. (8.0 mi. (12.9 km) from Roddickton Rd.), District 103.	0.8	9
Pikonema dimmockii (Cress.) Greenheaded spruce sawfly	bS, wS	Marystown, 1.3 mi. (2.1 km) W. of T.C.H. on Robinsons Rd., 2.0 mi. (3.2 km) E. of Deer Lake Airport (Airport Rd.), 1.0 mi. (1.6 km) E. of Birchy Dam, 4.0 mi. (6.4 km) N. of Hampden Jct., Districts 103 and 106.	0.5	12

Species	Host(s)	Locality	Average per tree	No. of collections
Pissodes dubius Rand. Balsam bark weevil	bF	1.2 mi. (1.9 km) S.W. of Camp 23 (N.W. Gander River Rd.).	0.3	1
Podabrus sp. A soldier beetle	pCh	5.7 mi. (9.2 km) S.W. of Gate (N.W. Gander River Rd.).	0.3	1
Pristiphora geniculata (Htg.) Mountain ash sawfly	Mo	3.0 mi. (4.8 km) S. of South Branch along T.C.H., Barachois Prov. Park, Bonne Bay Rd. (12 mi. (19.3 km) from T.C.H.), Lomond Rd. (0.5 mi. (0.8 km) N.W. Lomond River), Districts 106, 108 and 109.	68.3	15
Pristiphora lena K. A spruce sawfly	bS, wS	Main Bk. Rd. (8.0 mi. (12.9 km) from Roddickton Rd.), 3.0 mi. (4.8 km) S. of Glovers Hr. Jct., 4.4 mi. (7.1 km) S. of Pt. Leamington, Hillview, St. Phillips.	0.4	5
Protoboarmia porcelaria indicataria Wlk. Dotted line looper	bF	Blue Hills Rd. (T.N.N.P.), 1.3 mi. (2.1 km) S. of Elliot's Cove, 6.5 mi. (10.5 km) E. of T.C.H. (Camp 180 Rd.).	0.2	3
Pyrrhalta decora (Say) Gray willow leaf beetle	W	16.5 mi. (26.6 km) from T.C.H. (Bay d'Espoir Rd.).	0.3	1
Sciaphila duplex Wlshm. Poplar leaf roller	tA	0.8 mi. (1.3 km) E. of Jumpers Bk. (Old Rd.).	0.3	1
Scoliopteryx libatrix Linn. Willow scalloped owlet	W	4.0 mi. (6.4 km) W. of Charleston, Pynns Bk., N.E. end Birchy Lake, 3.0 mi. (4.8 km) W. on Churchill Rd., Jct. Goose Arm and North Lake Rds., White River Rd., Sop's Arm Rd. (1.5 mi. (2.4 km) from Hampden Rd.).	0.8	7

OTHER NOTEWORTHY INSECTS (Continued)

Species	Host(s)	Locality	Average per tree	No. of collections
Semiothisa sp. A looper	bF, bS, tL	7.0 mi. (11.3 km) N. of Head of Bay d'Espoir, Fishell's River, 2.0 mi. (3.2 km) S.W. Main Bk., 12.0 mi. (19.3 km) from T.C.H. (Bonne Bay Rd.), Districts 101, 103 and 104.	0.7	16
Sicya macularia Harr. Lumpy looper	Sal, W, lilac	Pippy Park, Bellevue Beach Prov. Park, Gate on Terra Nova Rd., Pynns Bk.	0.6	4
Solenobia walshella Clem. A bagworm	bF, bS	0.5 mi. (0.8 km) N. of Salt Pond, Codroy Pond, 1.3 mi. (2.1 km) W. of T.C.H. (Robinsons Rd.), Districts 101 and 103.	0.5	10
Syneta sp. A leaf beetle	bF	Lake Ambrose (Harpoon Hill).	1.5	1
Syngrapha alias (Ottol.) Spruce climbing cutworm	bF, bS	3.0 mi. (4.8 km) E. of Bay D'Espoir Rd., 6.5 mi. (10.5 km) E. of T.C.H. on Camp 180 Rd., Lochleven, Pinchgut Lake Rd., Goose Arm Rd., 2 mi. (3.2 km) S.E. of Lomond, Districts 103 and 106.	0.2	13
Syngrapha selecta (Wlk.) Verdigris autograph	bS	6.8 mi. (10.9 km) S.W. of Gate (N.W. Gander River Rd.), S.W. end of Birchy Ridge.	0.2	2
Trichiosoma sp. A sawfly	W	Reidville	3.0	1

OTHER NOTEWORTHY INSECTS (Concluded)

Species	Host(s)	Locality	Average per tree	No. of collections
Vasates quadripes Shimer Maple bladdergall mite	rM	4.0 mi. (6.4 km) S. of T.C.H. (Jumpers Bk. Rd.), 4.4 mi. (7.1 km) E. of Princeton Jct.	150.0	2
Zeiraphera canadensis M. & F. Spruce bud moth	wS, bS, bF	Steel Mtn. Rd. (1.0 mi. (1.6 km) from T.C.H.), Glenburnie, C.F.S. Nursery (Pasadena), Indian River Prov. Park, 12.0 mi. (19.3 km) N.W. of Wiltondale, Glenburnie, Districts 101 and 103.	1.1	14
Zeiraphera fortunana Kft. Yellow spruce budworm	wS, bS	S.W. Arm (T.N.N.P.), 15.3 mi. (24.6 km) N. of Snowshoe Pond, Steel Mtn. Rd. (1.0 mi. (1.6 km) from T.C.H.), Cooks Bk., Districts 101 and 110.	1.2	9
Zeiraphera improbana Wlk.) Larch needle worm	tL	0.3 mi. (0.5 km) N. of Hearts Desire, Goobies, N.W. Gander River Rd., 3.0 mi. (4.8 km) S. of Glovers Hr. Jct., 4.0 mi. (6.4 km) S. of T.C.H. (Howley Rd.), Districts 103 and 109.	1.3	14

IMPORTANT FOREST DISEASES

Shoot and Leaf Blight of Aspen, Pollacia radiosa (Lib.) Bald. and Cif. - In 1974 this disease was most common in western and central Newfoundland. In western Newfoundland damage was estimated at 40% on 75% of trembling aspen regeneration at Deer Lake, Birchy Lake, McIsaacs Brook along the Trans Canada Highway and at Baie Verte Junction and Flatwater Pond on the Baie Verte Peninsula.

In central Newfoundland small stands of aspen five miles (8.0 km) southwest of Grand Falls and along the Trans Canada Highway near Glenwood were attacked and up to 65% of the new shoots were affected. A low incidence of this disease was also observed near Goose Bay, Labrador. This is the first record of the disease in Labrador.

Ink Spot of Aspen, Ciborinia whetzelii (Seav.) Seav. - Severe browning of semi-mature aspen was recorded along Spring Gulch near Goose Bay. The affected area extended along the river for three miles (4.8 km) and 90% of the foliage in the stand was affected. This is the first recorded incidence of this disease in Labrador.

Needle Rust of Balsam Fir, Pucciniastrum epilobii Otth - This rust was common on balsam fir throughout the Island. Light infection was recorded in western Newfoundland in the districts of White Bay and St. Barbe, with about 10% browning at Doctors Brook and Sheffield Lake and an estimated 20% browning near Howley. Light infection was also recorded at Badger and Grand Falls in central Newfoundland. In eastern Newfoundland this disease was common throughout the Avalon and Burin Peninsulas, however, only light damage occurred.

Needle Rust of Black Spruce, Chrysomyxa ledicola Lagerh. and C. ledi d'By - A high incidence of this disease was recorded at Pistolet Bay on the Northern Peninsula. Approximately 50% browning was observed. At River of Ponds, Silver Mountain and Crooked Feeder about 15% browning was noted.

In eastern Newfoundland, patches of rust damage were observed on mature black spruce along the edges of bogs and ponds on the Avalon Peninsula from Come-by-Chance to Holyrood but was more prominent between Whitbourne and Blaketown. A trace to light infection on black spruce was also observed on both the Bonavista and Burin Peninsulas.

Needle Casts of Conifers - Needle casts of black spruce, Isthmiella crepidiformis (Darker) Darker and Lirula macrospora (Hartig) Darker, were reported from all districts and were more pronounced on trees affected by winter drying. About 20% browning was recorded along the highway near Elliots Cove on Random Island. Approximately 10% browning of black spruce occurred along the Harcourt Road.

Needle Cast of Scots Pine, Lophodermium pinastri (Schrad. ex Hook) Chev., was common in and around St. John's and affected up to 80% of the foliage.

Leaf Rusts, Gymnosporangium cornutum Arth. ex Kern - A low incidence of this disease was recorded near St. Veronica's, Bay d'Espoir. Approximately 20% of the foliage of mountain ash was affected. Damage was also conspicuous near Badger, Gambo and on the Avalon Peninsula. Leaf Rust of White Birch, Melampsoridium betulinum (Fr.) Kleb., was recorded at various location on the Island and 20% browning occurred near Hearts Desire on the Avalon Peninsula.

Leaf Rust of Willow, Melampsora epitea Thum., and M. abietis-capraearum Tub., caused 20% damage along the Salmonier Line and in the Windsor Lake area. The incidence of willow leaf rust was found throughout the Happy Valley and Goose Bay areas extending as far west as Otter Creek in Labrador. An estimated 60% of the foliage was infected.

Yellow Witch's Broom, Melampsorella caryophyllacearum Schroet. - This disease was very conspicuous on immature balsam fir on a woods road between Badger and Grand Falls and along the Gander Bay road. About 30% of the trees were affected in both locations. A minimum of one broom per tree and a maximum of 11 brooms per tree were observed in both areas.

Winter Drying - This disease caused considerable damage both in central and eastern Newfoundland.

In central Newfoundland approximately 200 acres (81 hectares) were affected along the Trans Canada Highway near South Pond, Hall's Bay. About 60% browning of foliage occurred in the area, consisting of 70% balsam fir with no visible damage to the remaining 30% black spruce. An estimated 60% browning also occurred on black spruce foliage in the Buchan's Junction area.

In eastern Newfoundland light damage occurred on balsam fir along the Gander Bay road. Moderate damage was recorded in stands of balsam fir from Hearts Desire to Hearts Delight, a distance of five miles (8.0 km), and in a fir stand one mile (1.6 km) along the highway between Cavendish and Whiteway. Light to moderate browning was also noted in a small fir stand near Dildo and between Holyrood Pond Provincial Park and St. Vincents. Severe damage to weather beaten balsam fir was recorded along the coast from St. Vincents to Peters River on the Avalon Peninsula.

Frost Damage - The incidence of frost damage on trees and shrubs was low throughout the Island, except for a few areas in the Terra Nova National Park where 30% of the new shoots of balsam fir regeneration and 60% of the new shoots of black spruce regeneration were killed.

Fume Damage - Extensive tree damage in the form of browning of foliage and tree mortality continued in the Long Harbour area. Surveys conducted near the Trans Canada Highway showed light needle tip burns to most fir and spruce stands. This area has a history of ice storm damage and many stands show signs of this damage.

In 1974 a detailed study was started by the Environmental Section of the Newfoundland Forest Research Centre to determine the effects of fluoride emissions on vegetation and soils near the phosphorus plant at Long Harbour. A report on these studies will be published in the near future.

Damage and tree mortality was also observed on balsam fir, black spruce, white birch, speckled alder and several other shrubs in the vicinity of the Labrador Linerboard Mill at Stephenville. The damage was most severe within one-half mile (0.8 km) of the mill particularly in a southeast direction from the mill. Some damage in the form of bleaching and browning was also observed on scattered trees and shrubs from Stephenville to Stephenville Crossing. The damage was initiated at the margins of the leaves of the hardwoods and at the needle tips of the softwoods. It was apparently caused by the emission products from the mill, notably sulphur dioxide and hydrogen sulphide.

Data collected from the sampling sites showed some evidence of damage on all species of trees and shrubs examined, with a maximum browning of 80% on individual trees. About 40% of the balsam fir trees have been killed, but no mortality of other tree species was recorded, and no dead balsam fir were found more than one-half mile from the mill.

Salt Spray Damage - A low incidence of damage caused by road salt spray and exposure to high winds was observed on some ornamental scots pine in St. John's. This type of damage is recorded every year on trees adjacent to well-travelled roads in the city.

Roadside Damage - Considerable browning of foliage and some mortality of all tree and shrub species was observed along gravel roads throughout western and central Newfoundland. The damage was most conspicuous along roads recently constructed or those being paved. It is probably caused by physical site disturbances, exposure, dust, snow, ice or vehicle fumes.

OTHER NOTEWORTHY DISEASES

Organism and Disease	Host(s)	Locality	Remarks
Apiosporina morbosa (Schw.) Arx Black knot	Cherry, pin; plum	All areas	Moderate to severe infection
Armillaria mellea (Vahl ex Fr.) Kummer Shoe-string root rot	Fir, balsam; spruce, black and sitka	Western Nfld.	Light to moderate infection
Cercospora salicina Ell. & Ev. Leaf spot	Willow	Cormack area in western Nfld.	Infection in traces
Chrysomyxa empetri Schroet. ex Cummins Needle rust	Spruce, white	White Bay, Jct. Cooks Hr. & St. Anthony on the Northern Peninsula, Middle Brook & Jefferys in western Nfld.	Light to moderate infection
Coccomyces hiemalis Higgins Shot hole	Cherry, pin	Badger in central Nfld.	Infection in traces
Cronartium coleosporioides Arth. Blister rust	Pine, Jack	Colliers on the Avalon Peninsula	Infection in traces
Cronartium ribicola J.C. Fischer White pine blister rust	Pine, eastern white; currant, black	Eastern, central and western Nfld.	Moderate to severe infection
Cylindrosporium betulae Davis Leaf spot	Birch, white	St. Barbe on the Northern Peninsula, Gallants in western Nfld.	Light to severe infection

OTHER NOTEWORTHY DISEASES (Continued)

Organism and Disease	Host(s)	Locality	Remarks
Cytospora salicis (Cda.) Rabh. Stem canker	Willow, pussy	Avalon Peninsula, Hall's Bay, Grand Falls and South Brook in central Nfld.	Trace to severe infection
Fusiococcum abietinum (Hartig) Prill. & Del. Red flag	Fir, balsam	Bonavista Peninsula, western Nfld.	Light infection
Gloeosporium apocryptum Ell. & Ev. Large leaf spot	Maple, red and mountain	Central Nfld.	Moderate infection
Hypodermella laricis V. Tub Needle cast	Larch, tamarack	Terra Nova National Park in central Nfld., Deer Lake in western Nfld. and Bonavista Peninsula	Trace to light infection
Isthmiella faullii (Darker) Darker Needle cast	Fir, balsam	Avalon Peninsula, western Nfld.	Light infection
Lirula nervata (Darker) Darker Needle cast	Fir, balsam	Terra Nova National Park, Terra Nova Jct., Gander Bay Road in central Nfld.	Light to moderate infection
Lophodermium species Needle cast	Fir, balsam	Central and western Nfld.	Light infection
Meliola pinicola Dearn. Sooty mold	Fir, balsam spruce, white	Avalon Peninsula	Trace to light infection
Mycosphaerella colorata (Pk.) Earle Leaf spot	Laurel, sheep	Badger in central Nfld.	Light infection

OTHER NOTEWORTHY DISEASES (Concluded)

Organism and Disease	Host(s)	Locality	Remarks
Mycosphaerella species Leaf spot	Ash, European mountain	Avalon Peninsula	Light infection
Phyllosticta minima (Berk. & Curt) underw. and Earle Purple eye spot	Maple, red and mountain	George's Bk. on the Bonavista Peninsula, Appleton in central Nfld. and in western Nfld.	Light to severe infection
Rhizosphaera abietis Mang. & Har. Needle blight	Fir, balsam	Western Nfld.	Light infection
Rhytisma acerinum (Pers.) Fr. Tar spot	Maple, red	Bay d'Espoir in southern Nfld.	Infection in traces
Rhytisma punctatum (Pers.) Fr. Speckled tar spot	Maple, mountain	Cormack in western Nfld.	Light infection

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